of such investigation. The author's conclusion is that the 'central cells' (Hauptzellen) of the fundus-glands are certainly very closely connected with the secretion of the gastric juice. It is very probable that they secrete pepsin, but they may also secrete the hydrochloric acid, though there is no good evidence that they do. The cells of the pyloric glands also probably secrete pepsin. The function of the 'parietal cells' (Belegzellen) of the fundus-glands is not so well understood, but it is probable that they also secrete pepsin. The 'parietal cells' of mammals are by no means identical with the fundus-cells of lower Vertebrates. In closing the discussion he says: "I have emphasized the point that a certain function in one kind of cell does not exclude the possibility of the same or a similar function in another kind." In fact the whole discussion only tends to show how much in the dark we are as regards the actual functions of these cells.

It is impossible to take up the different chapters in detail, as they are so largely summaries of the work of various investigators.

Following the text appears a table of the animals mentioned, arranged according to their systematic position. The classification is in part that followed by Claus in the fifth edition of his 'Lehrbuch der Zoologie.' This table is followed by a list of the same names arranged alphabetically, their systematic position being indicated by the name of the family, order, etc. The next thirty pages are occupied by the literature, and a good index finishes the book. Thus this part is complete in itself as a histology of the vertebrate stomach.

The volume comprises some 530 octavo pages. In reading it one cannot fail to be impressed with the patience of the author, nor to admire the temper of a man who enters single-handed on a subject of such magnitude. It is to be hoped that the work may be carried to completion, for it will constitute a most valuable aid to future research. It is not a book for the general reader, nor is it a text-book, but the student and investigator will find in it a careful resumé of our present knowledge of the histology of the vertebrate stomach. It is, in fact, as the author has said, a key to the literature, and thanks are due to the man who is willing to undertake the so often thankless task of compilation necessary to such a work.

C. M. CHILD.

UNIVERSITY OF CHICAGO.

SOCIETIES AND ACADEMIES.

BIOLOGICAL SOCIETY OF WASHINGTON; 264TH MEETING. SATURDAY, OCTOBER 24.

DR. ERWIN F. SMITH exhibited specimens of *Leuconostoc mesenteroides* from a sugar house in Louisiana. These were in the shape of fist-large gelatinous aggregates. If the vats are not sterilized at frequent intervals this organism multiplies very rapidly in the sugar cane juice and causes much inconvenience and loss.

Mr. Frederick V. Coville exhibited specimens of the *Hæmatococcus* which is the cause of the so-called 'red snow,' and also the seeds of the Western water lily, *Nymphæa polysepala*. These seeds, in spite of their small size, are an important article of food of the Indians of western Oregon and are extensively collected in Klamath Lake. The seeds are dried and parched in baskets by the use of heated stones.

Mr. C. L. Pollard noted the addition of *Iresine paniculata* to the fauna of the district, specimens having been found on Plummer's Island.

Mr. B. E. Fernow exhibited a series of shrubby and arborescent plants from Arizona, in which many growing points and shoots are changed into spines; the series beginning with *Ceanothus* and ending with *Kœberlinia* and the rare *Holacantha emoryi* showed, with the decrease in the amount and size of foliage, an increase of the number and size of spines, the latter two species consisting entirely of spines, the leaves being reduced to early caducous bracts.

Mr. Albert F. Woods spoke of a plant disease of the foliage of maples, caused by 'red spiders' and excessive atmospheric moisture.

Dr. C. Hart Merriam described a 'New Fir from Arizona,' which he named *Abies arizonica*. It differs from its nearest relative, *A. lasiocarpa*, in the character of the bark, which is a fine-grained cork and in the shape of the cone scales.

Mr. Frederick V. Coville briefly noticed

Britton and Brown's Illustrated Flora of the Northern United States and Canada.

Dr. Erwin F. Smith described a *Bacterial Disease of Potatoes, Tomatoes and Eggplants*, caused by a new micro-organism, *Bacillus solanaceanum*, which he believed to be the cause of a large part of the potato rot of the United States. Numerous infection experiments performed in 1895 and repeated this year have set the parasitic nature of the organism beyond dispute. The following are some of the peculiarities of this bacillus: Organism motile; forms zoögloea in liquid cultures; does not liquefy gelatin; strictly ærobic, does not produce any gas or any acid when grown in the presence of sugars; produces an abundance of alkali (ammonia) in various media; develops a decided brown pigment when grown in the presence of various sugars (agar cultures, fermentation tubes, potato cultures, etc.); grows readily in the thermostat at 37° C.; thermal death point (ten minutes' exposure) about 52°C. The organism is probably transmitted from diseased to healthy plants by means of insects. In the greenhouse, under strict control conditions, very successful infections have been obtained by means of the Colorado potato beetle (*Doryphora 10-lineata*). A bulletin giving a full account of this parasite will soon be published by the Division of Vegetable Physiology and Pathology, U. S. Department of Agriculture.

F. A. Lucas,
Secretary.

ENTOMOLOGICAL SOCIETY OF WASHINGTON, OCTOBER 8, 1896.

The President announced the death of Mr. Henry F. Schönborn, a Washington entomologist, who possessed the largest private collection of Lepidoptera in the city.

Mr. Ashmead exhibited a female specimen of the family Thynnidæ which he had found in the National Museum collection labelled 'Alameda County, California.' This is the second North American species of this family recorded from America. Mr. Ashmead will call it *Glyptometopa americana*. Some discussion ensued and it was suggested that both species had been accidentally imported into America.

Mr. Heidemann exhibited a drawing of the winged male of *Rheumatobates rileyi*, showing that the description of the species must now be revised.

Mr. F. C. Pratt exhibited specimens of the spine-like cases of *Coleophora octagonella*, taken from orange, and which exactly resembled the thorns of orange.

Mr. Hubbard presented a preliminary notice of a new Coccid on birch from the Lake Superior region. This insect is very abundant and causes the general destruction of the bark of birch trees, so much so that it is difficult to find near the Lake a tree of any size with smooth or natural bark. The outer bark is roughened, covered with curls and splits, blackened with sooty mold, and in bad cases entirely removed down to the last layer. Often the cambium itself is invaded and the tree is killed or seriously injured. The young larva of the Coccid crawls into the lenticels of the bark and, growing and forming thick masses of wax, causes the bark to heave and layers to separate in curls. He had studied the development of the species, which exhibited several remarkable features. The female undergoes three molts and has four stages, of which the larva and adult are active and possess legs and antennæ. The two intervening stages are stationary and degraded. The author considers the species to belong in all probability to the genus *Xylococcus*.

Dr. M. G. Motter presented a paper entitled 'A Contribution to the Study of some Necrophagous Diptera,' giving a preliminary announcement of some results of his study of the fauna of cadavers which he has been carrying on for some months with a view of substantiating or contradicting conclusions of Mégnin and other writers.

L. O. Howard,
Secretary.

NORTHWESTERN UNIVERSITY SCIENCE CLUB.

At the first meeting of the college year, October 9th, Dr. Marcy in the chair and eighteen persons present, Prof. Young presented for the department of chemistry 'Notes on the Development of Explosives,' in which he reviewed the processes of explosion and the nature and use of explosives.

A. R. Crook,
Secretary.